

## REMARKS

The last Office Action of March 30, 2010, has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1–5, 10–15, 19 and 20 are pending in the application. Claims 1–3, 10–13, 15, 19 and 20 have been amended. Claims 4, 5 and 14 have been canceled. Amendments to the specification have been made. No fee is due.

## OBJECTION TO THE SPECIFICATION

The Examiner's objection to the specification has been addressed by providing a cross-reference to earlier filed applications and proper headings.

Withdrawal of this rejection is respectfully requested.

## CLAIM REJECTIONS - 35 U.S.C. §103

Claims 1–5 and 10–15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Poetsch (4,875,102) in view of Nagano (4,845,531).

Claims 19–20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Poetsch (4,875,102) and Nagano (4,845,531) in view of Tanaka (3,867,030).

The rejection under 35 U.S.C. 103(a) is respectfully traversed in view of the amendments to the independent claims 1, 10, 19 and 20 and the following remarks.

Claim 1, to be discussed hereafter as an exemplary claim of the present invention and as amended herein, recites a film scanner having a first scanning device with a first light source emitting light in the visible spectral range for scanning frames of a cinematographic film by means of photoelectric transducers, and a second scanning device having a second light source for scanning sprocket holes, said second light source generating light in the infrared spectral range, and a photoelectric transducer being sensitive in the infrared spectral range. The spectral

sensitivities of the first and second scanning devices lie in non-overlapping spectral ranges, and wherein the second scanning device is configured to detect both the beginning and the end of the sprocket holes, said beginning and end of the sprocket holes defined by an edge region surrounding the sprocket holes exhibiting an increase in optical attenuation in the infrared spectral range that is different from the optical attenuation of both the film and the sprocket hole.

Poetsch (US 4,875,102) discloses detecting picture unsteadiness in television pictures obtained from a film scanner. Sprocket holes and the picture boundaries on the film and additional reference marks that may be provided on the film outside of the picture boundaries were scanned by an oblique sensor. Poetsch discloses various light source and sensor combinations to illuminate a sensor either by light reflected from the film by light transmitted through the film. Importantly, as admitted in the office action, Poetsch does not teach or suggest that the spectral sensitivities of the first and second scanning devices are non-overlapping spectral ranges. This aspect, however, and particularly the use of infrared illumination for scanning the sprocket holes, is a salient point of the present invention, because beginning and end of the sprocket holes defined by an edge region surrounding the sprocket holes exhibits an increase in optical attenuation in the infrared spectral range that is different from the optical attenuation of both the film and the sprocket hole.

The Examiner then points to Poetsch's use of a laser "which is known to have variable high frequencies, such as infrared light." However, Poetsch is silent about the wavelength used in the scanner and appears to use the line sensors 8, 53 or area sensor 63 of similar construction for oblique scanning the film image and the sprockets. Poetsch uses a steady (50) or pulsed (75) focused light source to produce a beam passing through the moving sprocket hole for impingement on the photodiode (70, 78). There is no teaching in Poetsch to use light other than visible light having a distinctly different optical absorption when passing through the film and the sprocket holes. As clearly seen in FIG. 2 of the present application, there is only a slight difference in optical absorption between the (unexposed) film base near the sprocket hole and the unobstructed sprocket hole itself. A skilled artisan would

therefore not be motivated, without having the benefit of the present invention (impermissible hindsight), to employ infrared light as illumination source for the sprocket holes. It is only the observation by the inventors that unexpectedly the absorption near the edges of the sprocket holes is significantly different from that of the surrounding film base and the unobstructed sprocket holes, which would motivate a skilled artisan to employ infrared light. Moreover, because images cannot be scanned with infrared light in a manner to yield a useful image (scanning color images requires RGB illumination), there is no teaching or suggestion at all in Poetsch to employ the infrared illumination according to the present invention to scan sprocket holes.

While Nagaro (US 4,845,531) discloses multiple light sources, these light sources are explicitly RGB light sources for scanning color film. However, only the use of an infrared light source according to the present invention is capable of detecting the beginning and end of the sprocket holes by measuring an increase in optical attenuation in the infrared spectral range of an edge region surrounding the sprocket holes, wherein the optical attenuation of an edge region is different from the optical attenuation of both the film and the sprocket hole.

Since neither Poetsch nor Nagaro teach or suggest using two different wavelength ranges, wherein one wavelength range is in the visible spectral range for scanning the film image, and the other wavelength range is in the infrared spectral range for scanning the sprockets, claim 1 (and the similar claims 10, 19 and 20) are patentable over Poetsch and Nagaro, taken either alone or in combination.

The Tanaka patent (US 3,867,030) discloses detection of image boundaries by detecting a density change between fore and aft edges of an exposed image and unexposed areas on a film strip. These density changes are clearly visible in the visible spectral range. In fact, because the density change between an exposed image and unexposed areas on a film strip are due to dye absorption, a light source emitting light in the absorption range of the image would be required, which for a slide would again be RGB.

Because there is no suggestion in Tanaka to employ infrared light, and the edge region surrounding the sprocket holes was found to exhibit an increase in optical attenuation essentially only in the infrared spectral range, the combination of Poetsch, Nagaro and Tanaka still fails to teach or suggest the features of amended claims 19 and 20, which are therefore patentable over the art of record.

For the reasons set forth above, it is applicant's contention that neither Poetsch nor Nagaro, nor Tanaka, taken alone or in any combination teach or suggest the features of the present invention, as recited in claim 1, 10, 19, 20.

As for the rejection of the retained dependent claims, these claims depend on claims 1 and 10, respectively, share their presumably allowable features, and therefore it is respectfully submitted that these claims should also be allowed.

Withdrawal of the rejection under 35 U.S.C. §103(a) and allowance thereof are thus respectfully requested.

## **CITED REFERENCES**

Applicant has also carefully scrutinized the further cited prior art and finds it without any relevance to the claims on file. It is thus felt that no specific discussion thereof is necessary.

## **CONCLUSION**

In view of the above presented remarks and amendments, it is respectfully submitted that all claims on file should be considered patentably differentiated over the art and should be allowed.

Reconsideration and allowance of the present application are respectfully requested.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this

would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

Respectfully submitted,

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